Schlumberger

Company:	ALTA MESA SERVICES, LP		
Well:	ML INVESTMENTS 2-10		
Field:	WILLOW		
County:	PAYETTE	State:	IDAHO

County:	PAYETTE
Field:	WILLOW
Location:	SHL: 1493.5' FNL & 1201.6' FEL
Well:	ML INVESTMENTS 2-10
Company:	ALTA MESA SERVICES, LP

Hostile Natural Gamma Ray Spectroscopy Log

CONFIDENTIAL

Location:	SHL: 1493.5' FNL & 1201.6' FEL		Elev.	K.B. G.L. D.F.	2318.26 ft 2298.26 ft 2317.26 ft
	Permanent Datum:	Ground Level	Elev.:		2298.26 f
	Log Measured From:	Kelly Bushing	20.00 ft		above Perm.Datum
	Drilling Measured From:	Kelly Bushing			

API Serial No.	Section:	Township:	Range:
11-075-20022-0000	10	8N	4W

Logging Date			09-Aug-2013			
Run Number			ONE			
Depth Driller			4991.00 ft			
Schlumberger Depth			4996.00 ft			
Bottom Log Interval			4988.00 ft			
Top Log Interval			962.00 ft			
Casing Driller Size @ Depth			8.625 in @ 960.00 ft			
Casing Schlumberger			962 ft			
Bit Size			7.875 in			
Type Fluid In Hole			Water			
MUD	Density	Viscosity	10 lbm/gal	39 s		
	Fluid Loss	PH	4.8 cm3	6.7		
	Source of Sample		Active Tank			
RM @ Meas Temp			1.14 ohm.m @ 97.7 degF			
RMF @ Meas Temp			0.86 ohm.m @ 97.7 degF			
RMC @ Meas Temp			1.72 ohm.m @ 97.7 degF			
Source RMF		RMC	Calculated	Calculated		
RM @ BHT		RMF @ BHT	0.56 @ 204.95	0.42 @ 204.95		
Max Recorded Temperatures			204.95 degF	204.95 204.95		
Circulation Stopped		Time	09-Aug-2013	11:00:00		
Logger on Bottom		Time	09-Aug-2013	21:45:00		
Unit Number		Location:	2271	66310		
Recorded By			STEVEN V/EVAN M			
Witnessed By			MIKE MCMENNAMY			

Disclaimer

THE USE OF AND RELIANCE UPON THIS RECORDED-DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED-DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE AND RELIANCE UPON THE RECORDED-DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED-DATA.

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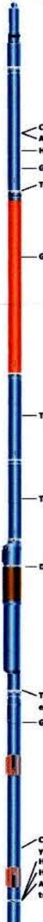
Remarks and Equipment Summary

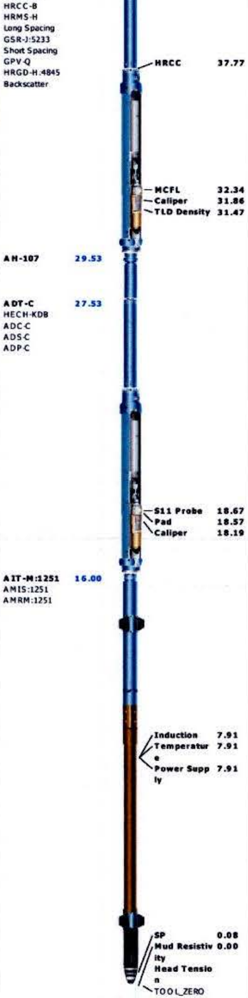
ONE: Toolstring

Equip name	Length
LEH-QT LEH-QT	82.44
EDTC-B EDTH-B EDTG-A EDTC-B	79.52
HNGS-BA HEH-K HNGS-BA	73.02
HNGC-B HNGH-A HNGC-B	64.83
LDSC-B LDSH-A LDSC-B	61.33
ECS-A ECSH-A ECSD-A ECS-A NSR-F	57.83
HGNS-H HGNH NSR-F:687 NPV-N HACCZ-H:5118 HGNS-H HMCA-H	51.18
HDRS-B ECH-MEB	41.77



MP name	Offset
CTEM	76.02
ACCZ	0.00
HV	0.00
Gamma Ray	74.15
TelStatus	73.02
GR	70.04
Tel Status	63.08
Tel Status	59.58
Detector	56.55
Temperature	51.16
GR	50.44
CNL Porosity	44.11
HGNS	41.77
HMCA	41.77
Accelerometer	0.00

ONE: Remarks
1. THIS IS THE FIRST RUN IN HOLE.
2. TOOL RAN AS PER TOOL SKETCH.
3. MATRIX = SANDSTONE, MATRIX DENSITY = 2.68 G/CC
4. FLUID DENSITY = 1.00 G/CC
5. WASHOUTS ADVERSELY AFFECT LOG QUALITY.
THANK YOU FOR CHOOSING ROCK SPRINGS WIRELINE!!!



Lengths are in ft
Maximum Outer Diameter = 9.000 in
Line: Sensor Location, Value: Gating Offset
All measurements are relative to TOOL_ZERO

Depth Summary

Depth Control Parameters	**ONE**		
Conveyance Type	Wireline		
Log Sequence	FIRST		
Rig Up Length at Surface (ft)	195.60		
Rig Up Length at Bottom (ft)	195.60		
Rig Up Length Correction (ft)	0.00		
Stretch Correction (ft)	5.73		
Tool Zero Reference Check at Surface (ft)	0.00		
Reference Log Date	09-Aug-2013		
Reference Log Name	DOWNLOG		
Reference Log Run Number	ONE		
Rig Type	SINGLE		
Depth Remark Parameters	**ONE**		
Depth Remark 1	1. ALL SCHLUMBERGER DEPTH PROCEDURES FOLLOWED		
Depth Remark 2	2. IDW USED AS PRIMARY DEPTH CONTROL		
Depth Remark 3	3. Z-CHART USED AS SECONDARY DEPTH CONTROL		
Depth Measuring Device	**ONE**		
Type	IDW-B		
Wheel Correction 1	1		
Wheel Correction 2	0		
Tension Device	**ONE**		
Type	CMTD-B/A		
Calibration Points	0		
Logging Cable	**ONE**		
Type	7-46NT-XS		
Logging Cable Length (ft)	24000.00		

ONE

Main Pass 5" = 100'

Integration Summary

Output Channel(s)	Output Description	Input Parameter	Output Value	Unit

Software Version

Acquisition System	Version
MaxWell	3.1.9755.0
Application Patch	SP-20130325-3.1.9755.1799
	EXP_APL-ADTFAM-3.1.9755.1876

Tool Elements	Description	Software Version	Firmware Version
HNGS-BA	HNGS Sonde Element	3.1.9755.0	2.0

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	Depth Shift	Include Parallel Data
ONE	Log[3]:Up	Up	868.43 ft	5010.40 ft	09-Aug-2013 9:54:54 PM	10-Aug-2013 12:18:33 AM	5.73 ft	

All depths are referenced to toolstring zero

Log

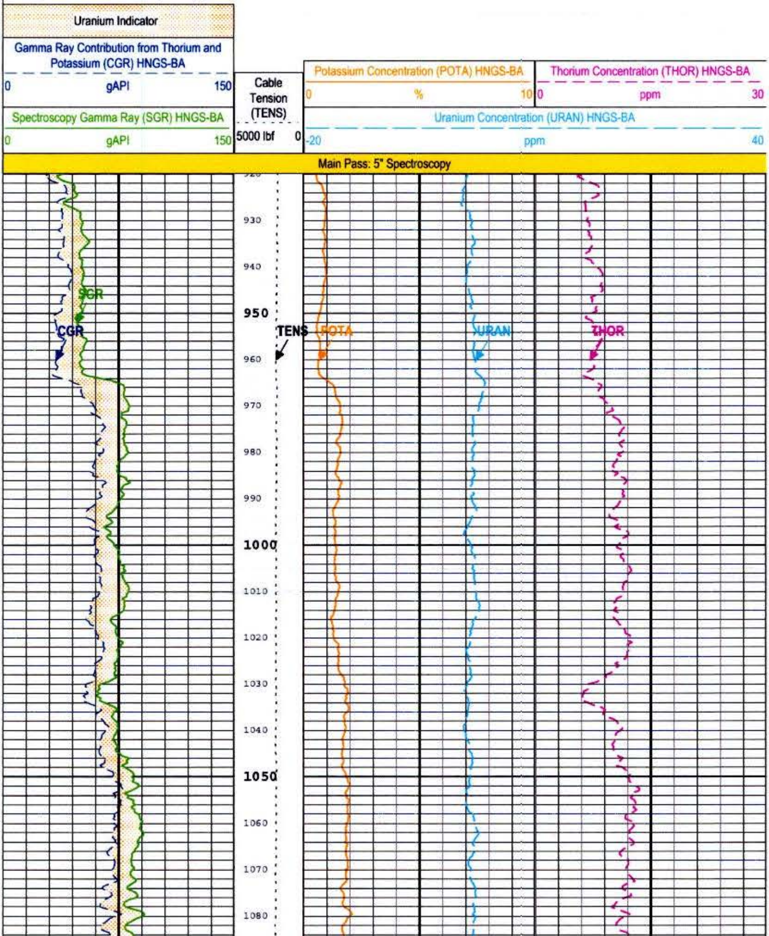
ONE: Log[3]:Up

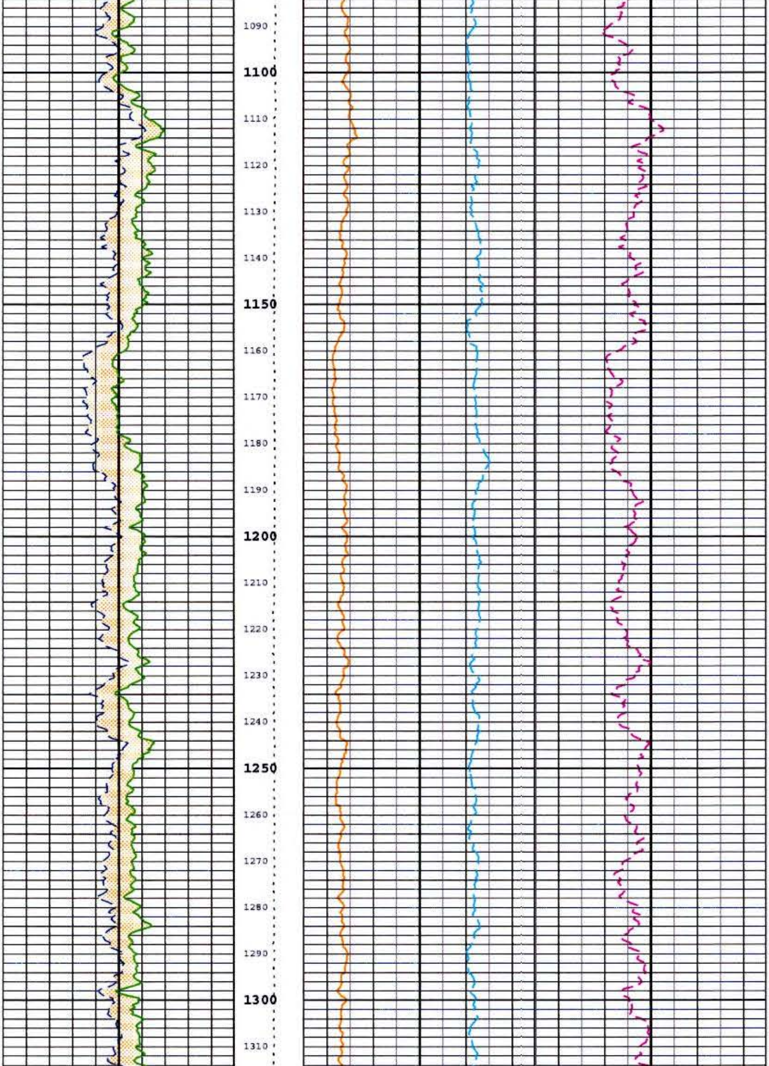
Description: Format: Log (Abilene HNGS) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 10-Aug-2013 02:25:17

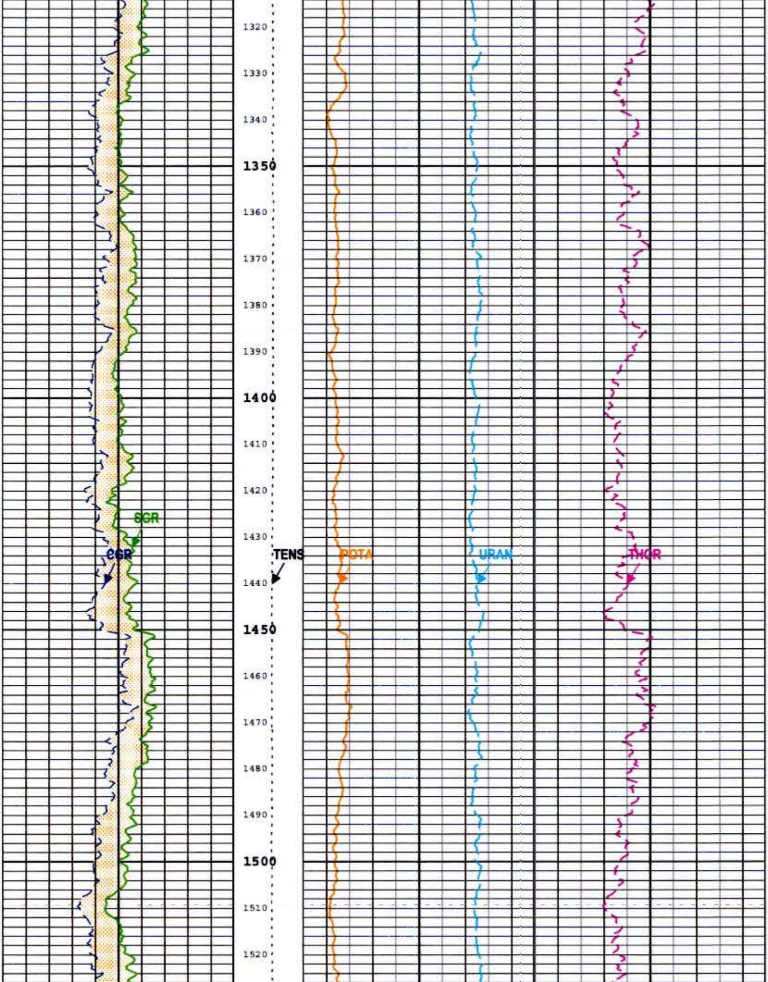
Channel	Source	Sampling
CGR	HNGS-BA:HNGS-BA:HNGS-BA	6in
POTA	HNGS-BA:HNGS-BA:HNGS-BA	6in
SGR	HNGS-BA:HNGS-BA:HNGS-BA	6in

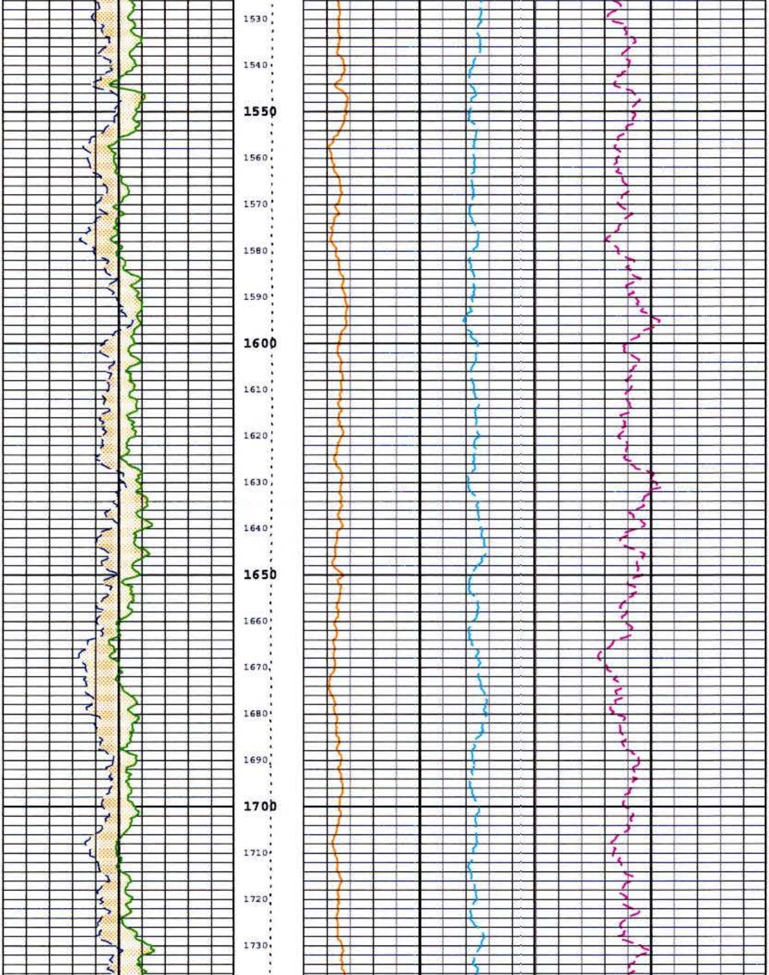
TENS	WLWorkflow	6in
THOR	HNGS-BA:HNGS-BA:HNGS-BA	6in
URAN	HNGS-BA:HNGS-BA:HNGS-BA	6in

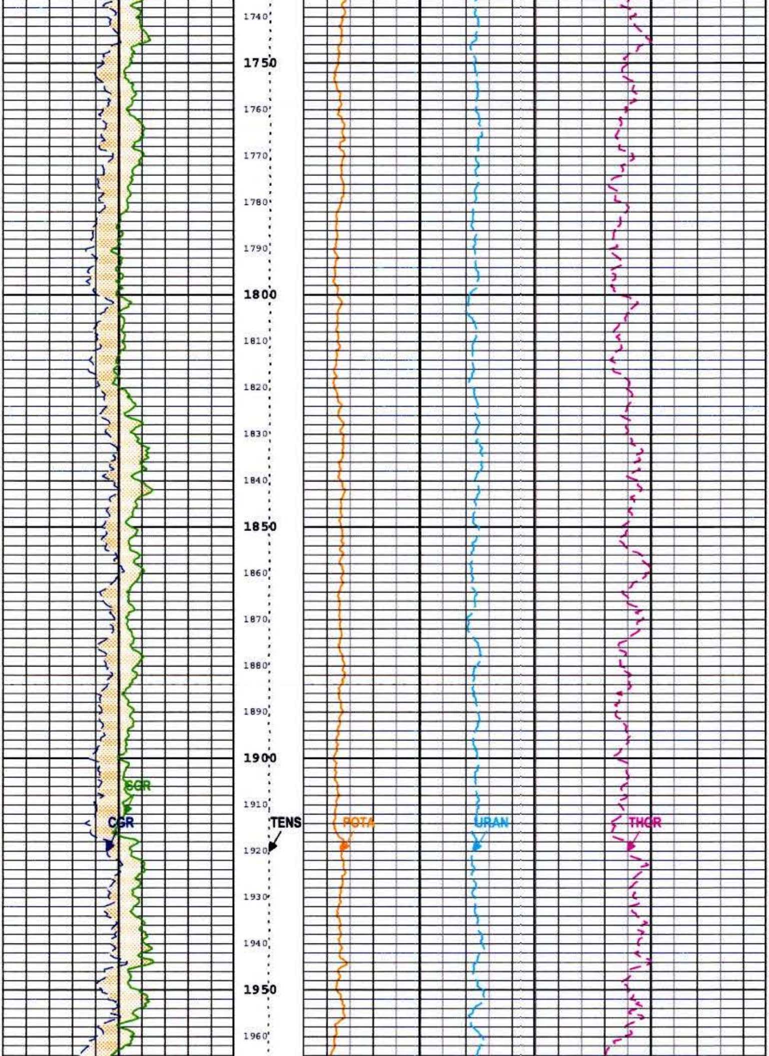
TIME_1900 - Time Marked every 60.00 (s)

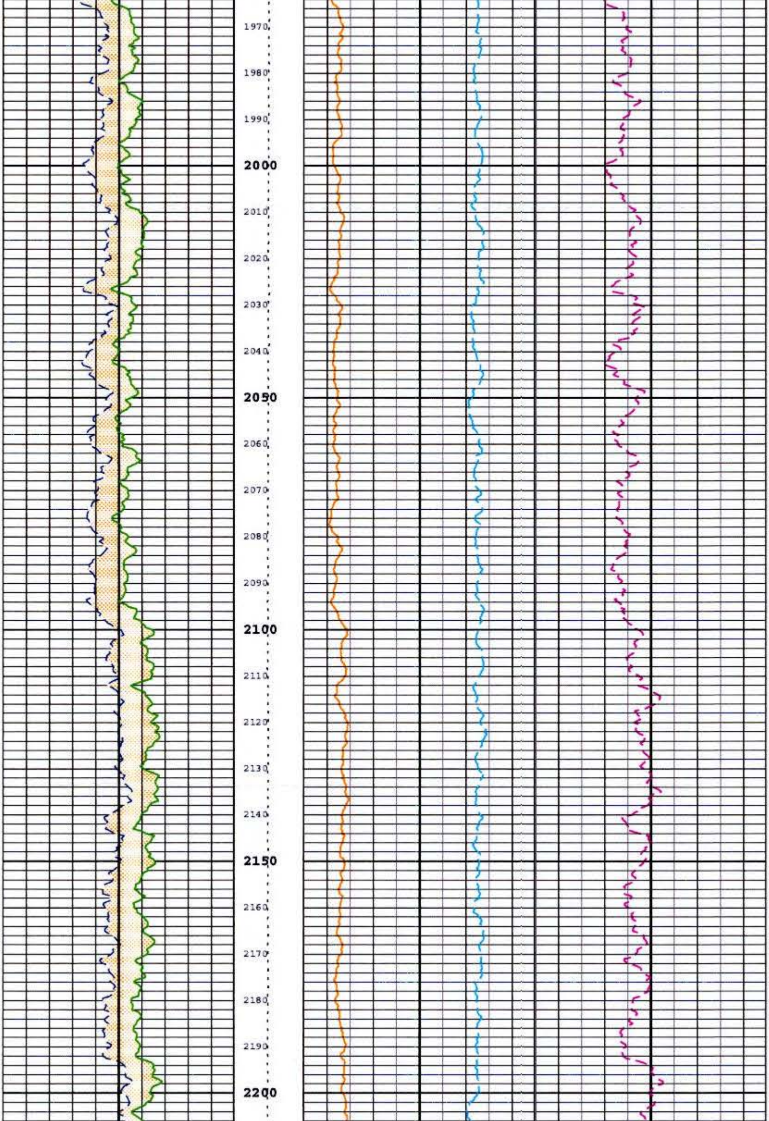


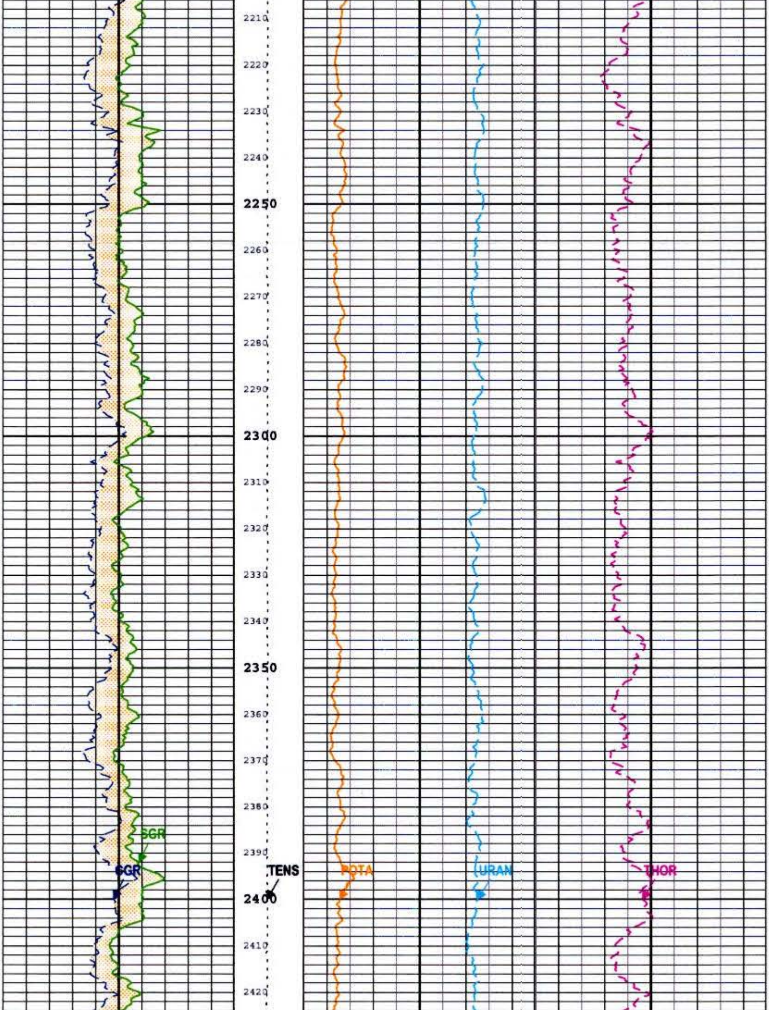


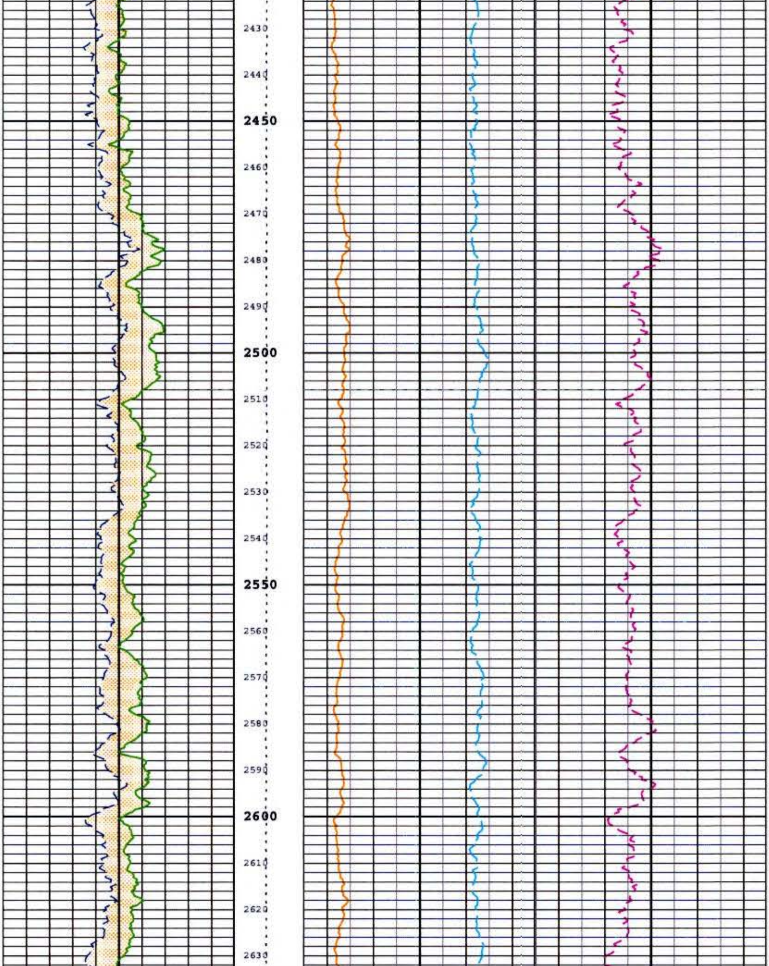


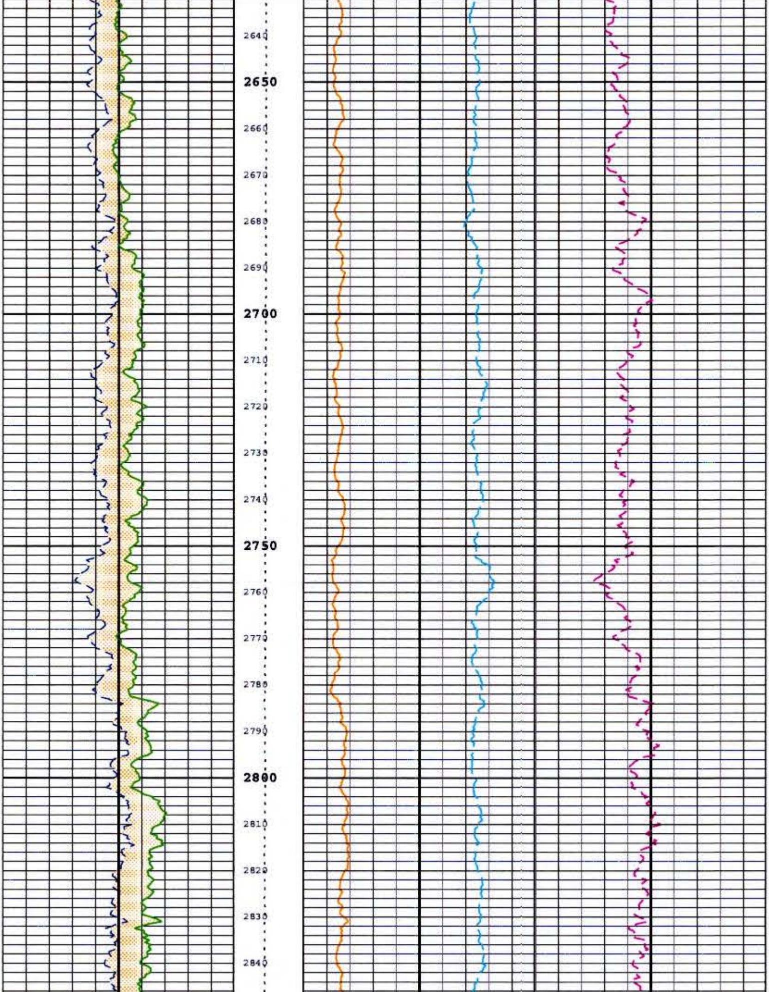


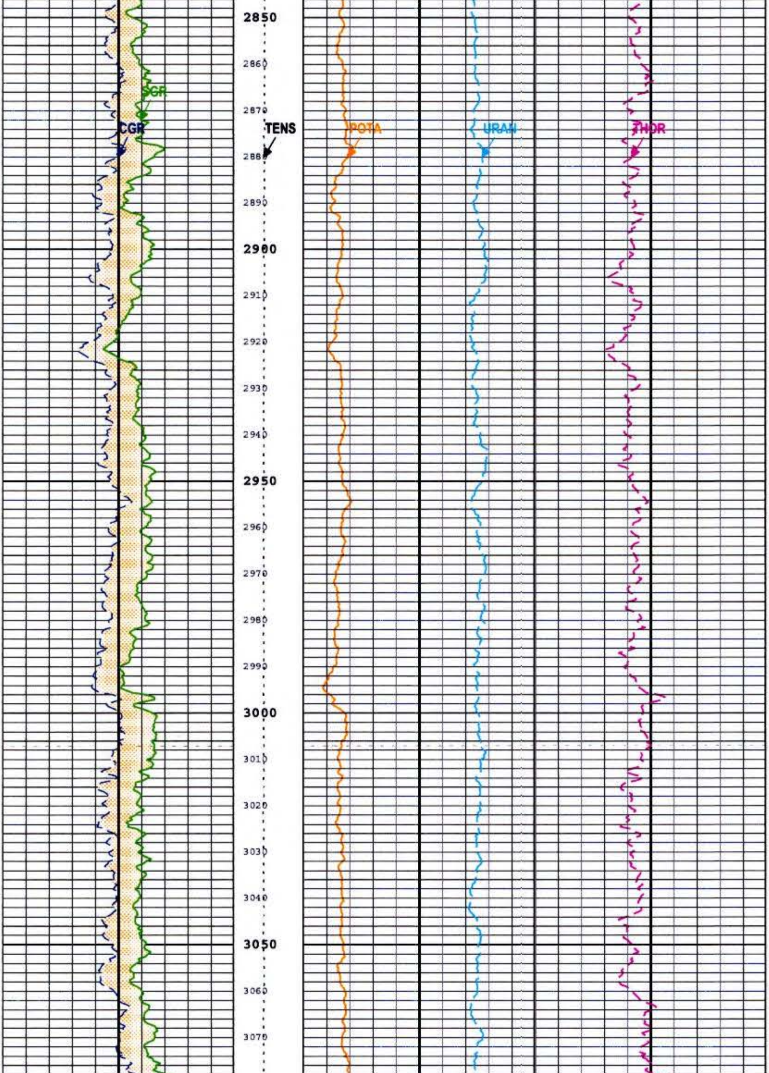


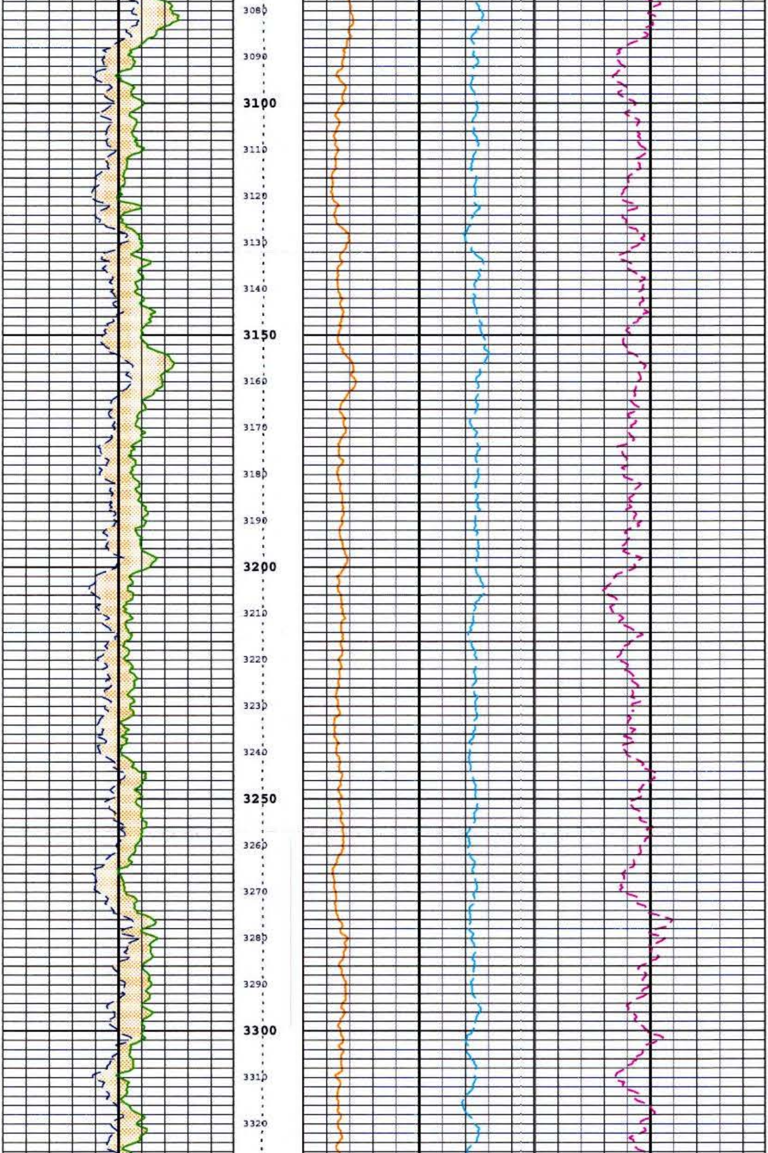


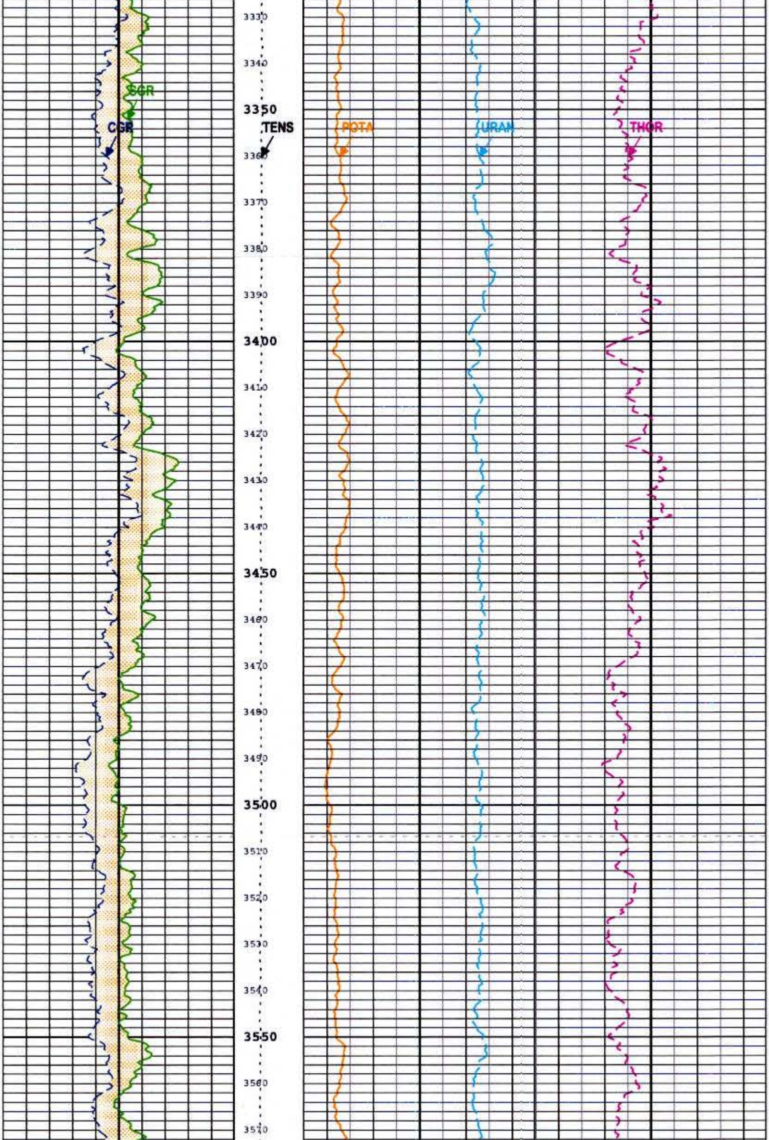


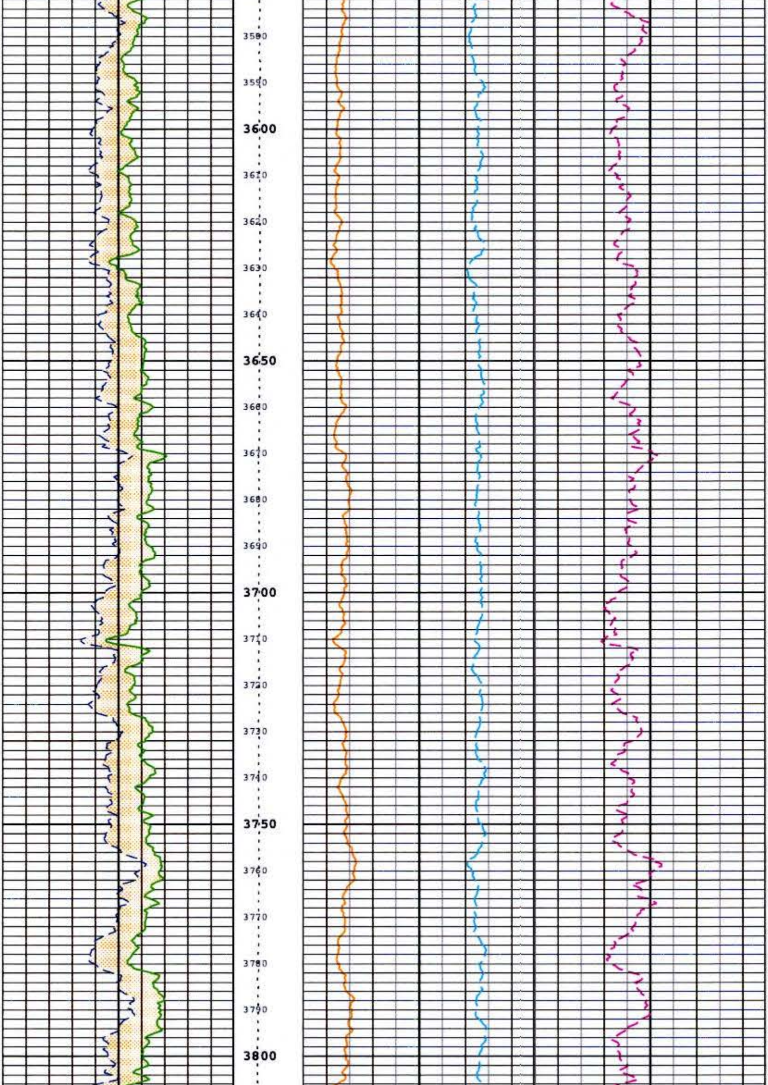


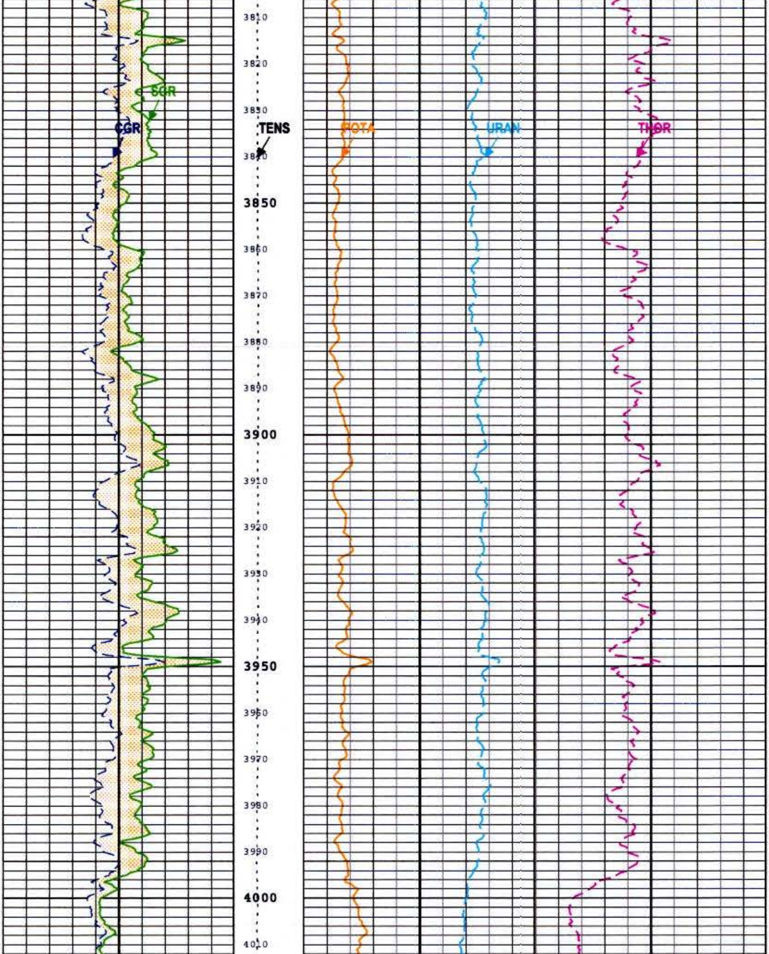


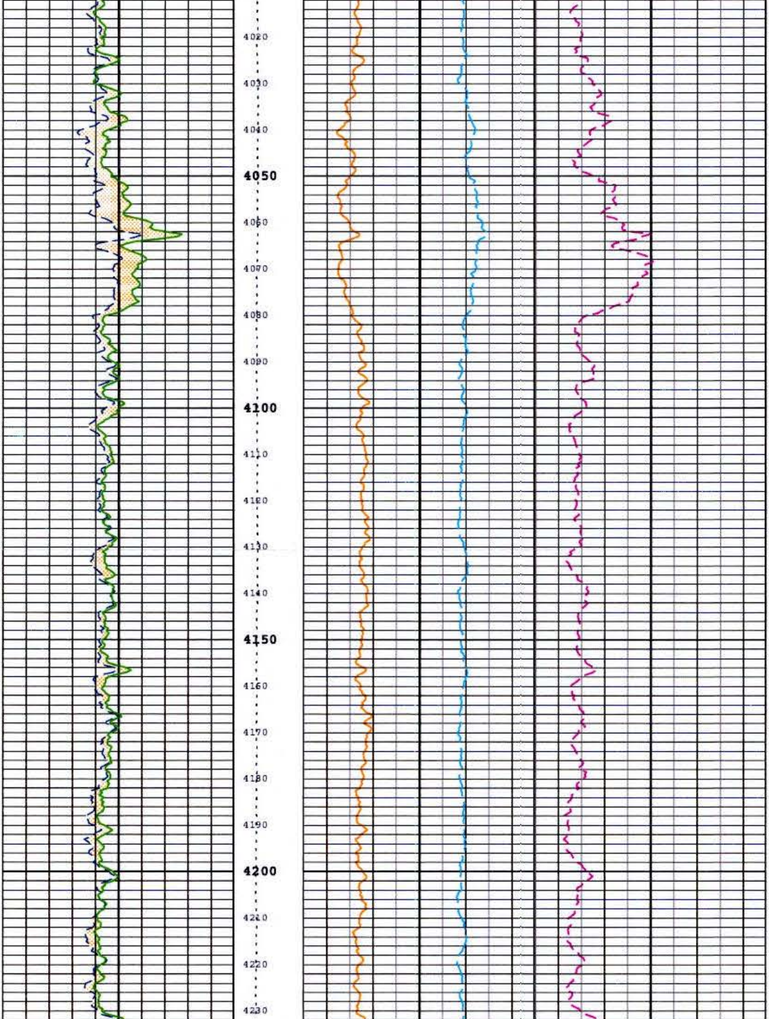


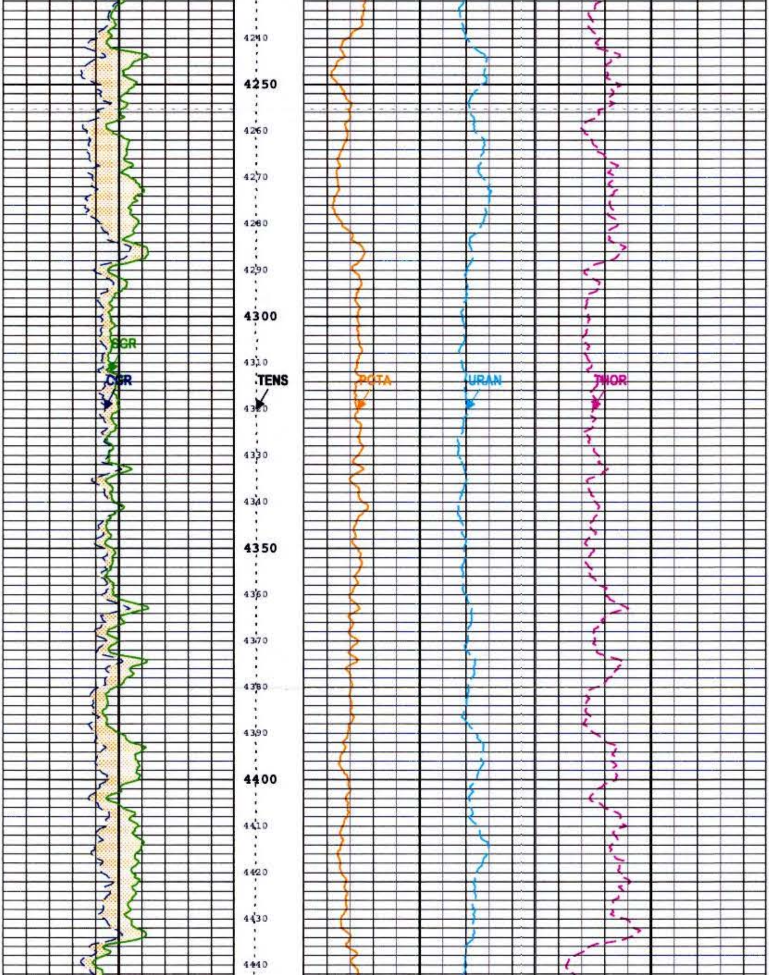


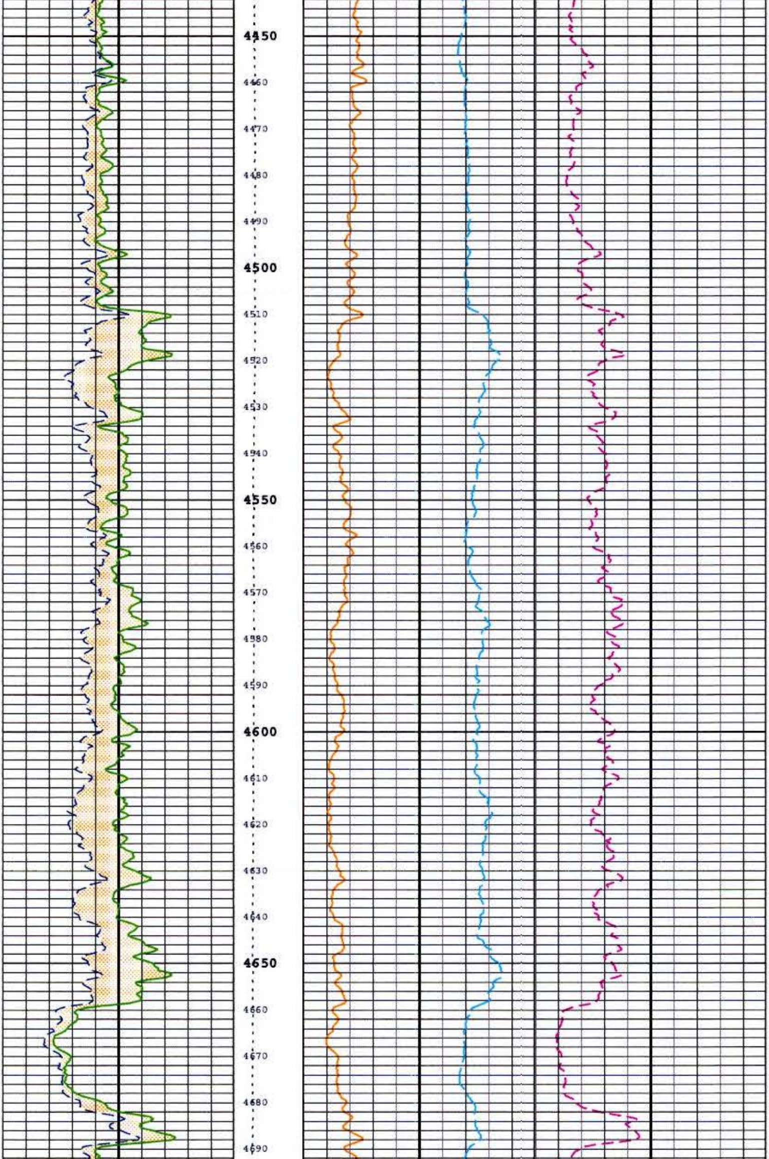


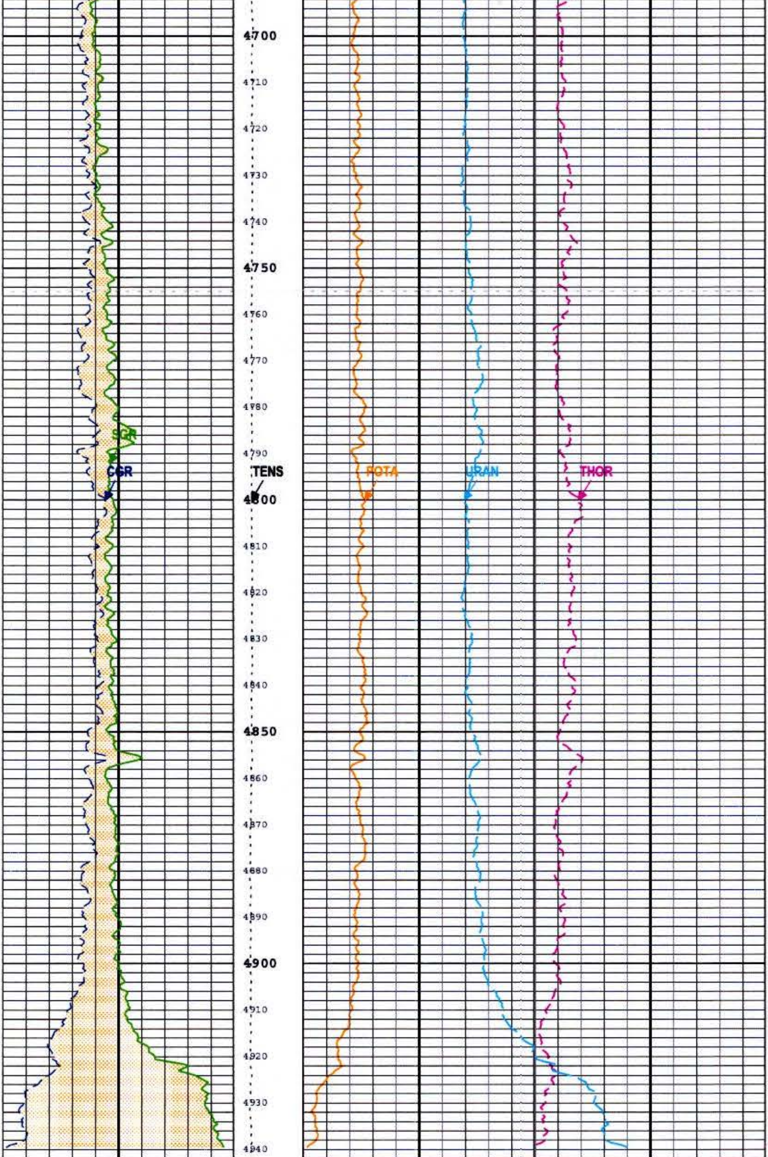


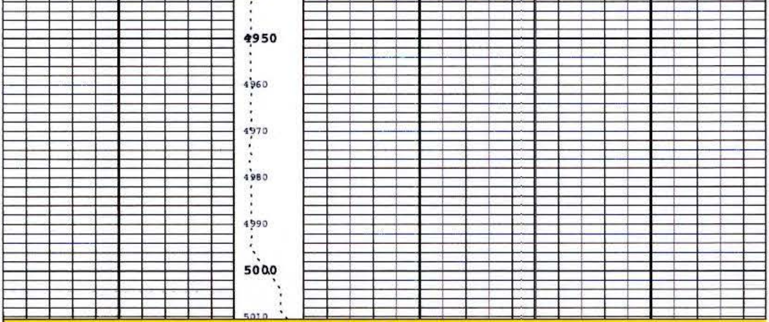












Main Pass: 5" Spectroscopy

Uranium Indicator

Gamma Ray Contribution from Thorium and Potassium (CGR) HNGS-BA

0 gAPI 150

Spectroscopy Gamma Ray (SGR) HNGS-BA

0 gAPI 150

Cable Tension (TENS)

5000 lbf 0

Uranium Concentration (URAN) HNGS-BA

-20 ppm 40

Potassium Concentration (POTA) HNGS-BA

0 % 10

Thorium Concentration (THOR) HNGS-BA

0 ppm 30

TIME_1900 - Time Marked every 60.00 (s)

Description: Format: Log (Abilene HNGS) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 10-Aug-2013 02:25:17

Channel Processing Parameters

Parameter	Description	Tool	Value	Unit
BARI	Barite Mud Presence Flag	Borehole	Yes	
BHK	Drilling Fluid Potassium Concentration	Borehole	0	%
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	Depth Zoned	in
CALI_SHIFT	CALI Supplementary Offset	HDRS-B	0.029	in
CBLO	Casing Bottom (Logger)	WLSESSION	962	ft
DBCC	Barite Constant Correction Flag	HNGS-BA	None	
DFD	Drilling Fluid Density	Borehole	10	lbm/gal
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	CALI	
HCRB	Apply Borehole Potassium Correction	HNGS-BA	None	
HEMA	Hematite Presence Flag	Borehole	No	
SGRC	Standard Gamma Ray Correction Flag	HNGS-BA	Yes	

Depth Zone Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	0	920	962
BS	7.875	962	5010.5

All depth are actual.

Tool Control Parameters

Parameter	Description	Tool	Value	Unit
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	1800	ft/h

ONE

Repeat Pass 5" = 100'

Integration Summary

Output Channel(s)	Output Description	Input Parameter	Output Value	Unit

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	Depth Shift	Include Parallel Data
ONE	Log[4]:Up	Up	204.61 ft	1412.91 ft	10-Aug-2013 12:19:43 AM	10-Aug-2013 12:54:34 AM	4.69 ft	

All depths are referenced to toolstring zero

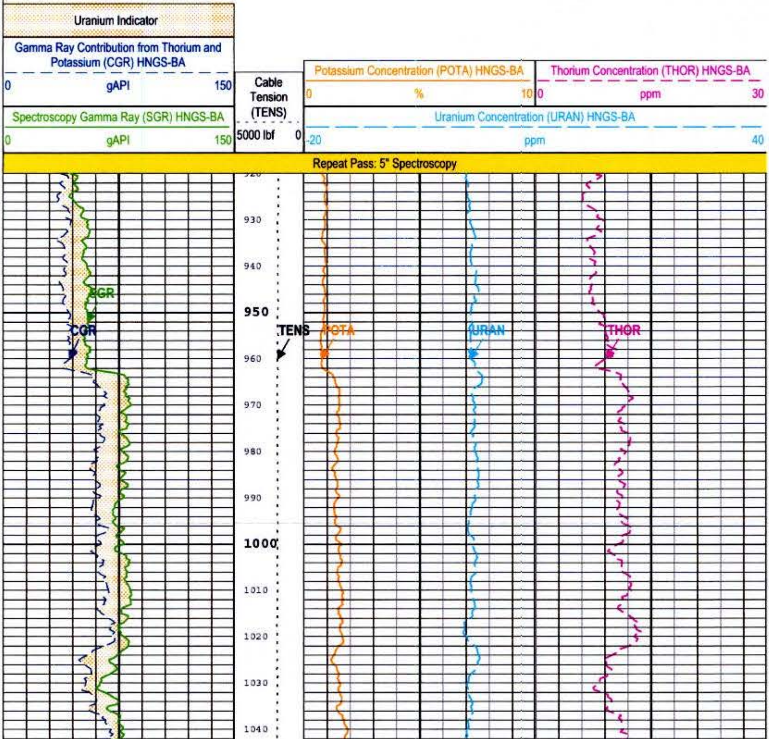
Log

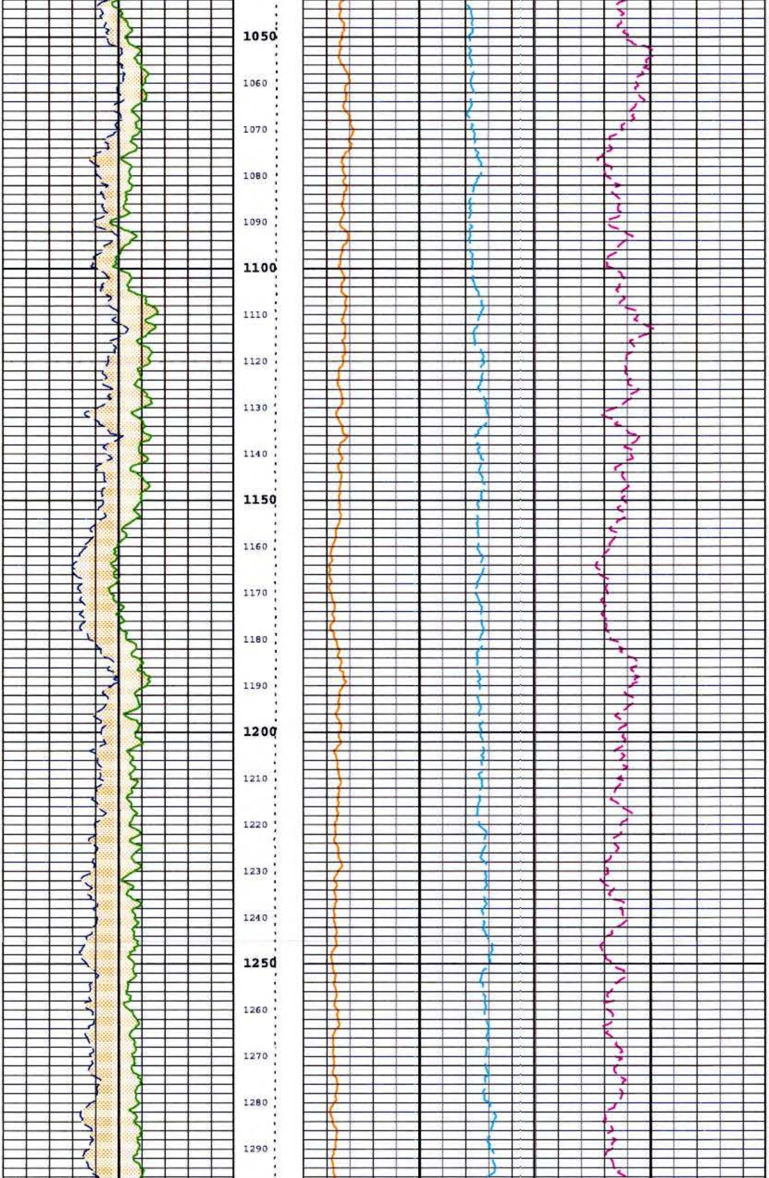
ONE: Log[4]:Up

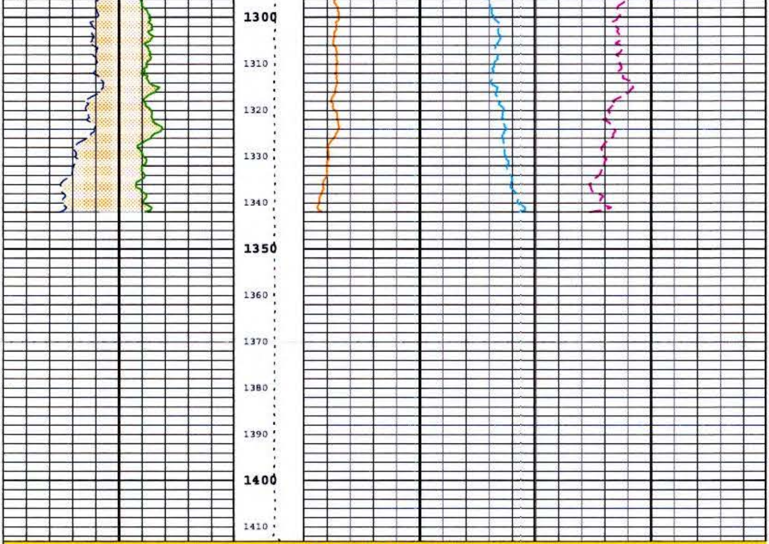
Description: Format: Log (Abilene HNGS Repeat) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 10-Aug-2013 02:25:19

Channel	Source	Sampling
CGR	HNGS-BA:HNGS-BA:HNGS-BA	6in
POTA	HNGS-BA:HNGS-BA:HNGS-BA	6in
SGR	HNGS-BA:HNGS-BA:HNGS-BA	6in
TENS	WLWorkflow	6in
THOR	HNGS-BA:HNGS-BA:HNGS-BA	6in
URAN	HNGS-BA:HNGS-BA:HNGS-BA	6in

TIME_1900 - Time Marked every 60.00 (s)







Repeat Pass: 5" Spectroscopy

Uranium Indicator	Cable Tension (TENS)	Uranium Concentration (URAN) HNGS-BA	
Gamma Ray Contribution from Thorium and Potassium (CGR) HNGS-BA 0 gAPI 150	5000 lbf 0	-20 ppm 40	
Spectroscopy Gamma Ray (SGR) HNGS-BA 0 gAPI 150		Potassium Concentration (POTA) HNGS-BA 0 % 10	Thorium Concentration (THOR) HNGS-BA 0 ppm 30

TIME_1900 - Time Marked every 60.00 (s)

Description: Format: Log (Abilene HNGS Repeat) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 10-Aug-2013 02:25:19

Company:	ALTA MESA SERVICES, LP
Well:	ML INVESTMENTS 2-10
Field:	WILLOW
County:	PAYETTE
State:	IDAHO

Schlumberger

Hostile Natural Gamma Ray Spectroscopy Log

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DEPT. OF LANDS
2013 SEP 17 PM 3: 29
BOISE, IDAHO